

## **Annotation**

This study investigates the connection between different pathophysiological processes in mitochondria and psychopathological symptoms in patients with bipolar disorder. Changes in activity of selected components of the respiratory chain and overall respiratory rate of mitochondria were analyzed in patients with bipolar disorder when compared to healthy controls. Diagnostic scales and questionnaires, high-resolution respirometry, radiochemical and spectroscopic methods were used. 37 patients with a diagnosis of bipolar disorder (F31) and 21 healthy volunteers were involved in the study. Statistical analysis included the methods of parametric and nonparametric analysis, factor analysis, one-way analysis of variance and linear regression analysis. Obtained results revealed that cellular energetics plays a great role in the pathophysiology of bipolar disorder. There was a mild difference between different mitochondrial enzymes activity in patients within manic phases and depressive phases of the disease. Changes in mitochondrial respiration in patients with BD as compared to healthy controls were also shown. Mitochondrial respiration indexes for patients with BD in remission as compared to healthy controls were altered in accordance with the previous phase of the disease. Association between the state of the disease, psychopathological symptoms, clinical improvement and mitochondrial pathology was established. The duration period between the acute manic state and remission and its dependence on the mitochondrial pathology indicators was established.